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Refereed papers

Email consultations in general practice

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ABSTRACT

Background Email is an established method of communication in business, leisure and education but not yet health care.

Aim To evaluate an email service enabling communication between patients and their general practice regarding repeat prescriptions, appointment booking and clinical enquiries.

Design Qualitative analysis of interactions and an electronic user survey.

Setting An urban practice in Dundee, Scotland.

Participants 150 patients aged 24 to 85.

Methods We set up a practice facility to allow our patients to use email to book appointments, order repeat prescriptions and consult their general practitioner (GP).

Results Patient satisfaction with the service was very high. Patients specifically commended the practice for setting up a facility to allow communication

outside standard working hours and for the ease of ordering repeat prescriptions. Patients were pleased to have a means of seeking their doctor's comment or opinion without bothering him or her by making and attending a formal face-to-face consultation. Email dialogue was polite, factual, but less formal than standard letters. Staff did not experience any perceptible rise in workload.

Conclusions Use of an email consultation facility worked well within an urban practice, was deemed helpful by patients, and resulted in no apparent increase in GP workload. Our results suggest that there may be an unmet need amongst patients for clinical email services, and that such services may have positive outcomes for patients and practices.

Keywords: communication, consultations, email

Introduction

Email communication is well established in business, science, social interaction and education. While email dialogue between healthcare professionals is common

practice, use of email to facilitate dialogue between patients and healthcare professionals is a new area. Increasing public internet access is likely to generate

pressure on general practices to respond to patient demand for email access for booking appointments, ordering prescriptions and asking for advice.¹⁻⁴

Arguments for an email dialogue between patients and professionals include the convenience offered by remote access and asynchronous communication, the ability to document clinical transactions, and the facility to attach documents or web links as a means of disseminating information. Email might also create opportunities to save unnecessary face-to-face contacts and potentially facilitate equity of decision making between client and healthcare advisor. Arguments against email include concerns about the dangers of the internet: confidentiality, social exclusion of the technically illiterate, lack of access to information technology (IT), intrusion into the lives and work patterns of busy general practitioners (GPs), and fears about security.⁵⁻⁸

Many patients might already have used email to contact their GP. Anecdotal evidence suggests that some GPs have experience of replying to such emails, even though this may be in breach of local health authority policy.⁹⁻¹² Most United Kingdom (UK) practices now have access to the internet and an email facility. Some use email to support communication between staff within the practice. Others use it to communicate with colleagues in hospitals and with health service administrators. Many practices thus have the capacity and technical skills to allow communication with patients by email.¹³ Individual GP email addresses are relatively easy for patients to obtain via health authority or individual practice websites and practice notepaper.

There is a lack of published work to evaluate the impact of email services for patients within UK general practice; there could be an unmet demand from patients to use email in communicating with their GPs for routine matters such as making appointments, repeat prescription requests, and asking simple questions to determine whether a face-to-face consultation is necessary.¹⁴⁻¹⁸ This project aimed to establish an email communication and consultation facility for patients within a general practice and to perform a quantitative and qualitative evaluation of this service.

Methods

Setting

The practice had five partners with a full range of practice-based and practice-attached staff and served a patient population of 7000, mainly resident in the city of Dundee but with a few living in rather more

affluent rural Perthshire. The practice had a track record of Information Management and Technology (IM&T) innovation, including the use of email to communicate within the primary care team and electronic referrals and results retrieval from secondary care. The patient population had an age-sex profile similar to the Scottish average, a low rate of turnover and a complete spectrum of socio-economic status.

Technical issues

We set up three dedicated email accounts to handle repeat prescription orders, appointment requests and clinical enquiries. All incoming emails on the clinical (doctors') account were forwarded to one GP (RN). He undertook to respond to them himself or to forward messages addressed to specified colleagues as necessary. Appointment emails were directed to reception staff who operated the practice electronic appointment book. The clerk responsible for processing repeat prescription requests dealt with all prescription emails. The practice IM&T manager (HM) developed a system whereby paired incoming doctors' emails and their replies could be saved directly into the patient's computerised clinical record.

A practice user guide was compiled, including instructions in how to reply to emails and how to save them. Reception staff were asked to keep their replies concerning appointments or prescriptions short, factual and polite. We planned to keep clinical emails brief, free of personal details not already declared within the incoming patients' emails, and polite. In short, we aimed to provide a triage service with options including advice to consult face-to-face, supply of simple fact, further information sources, or to confirm that an administrative task would be completed.

Patient recruitment

Our target recruitment number was 100 patients. We were unable to determine which of our patients had access to email at home or at work and which patients might wish to use a GP email service. We opted to recruit proactively from the practice age-sex register and reactively in response to patient requests. We used a random numbers sequence to produce sample batches of 100 names and addresses of adults aged over 18 registered with the practice. We sent an invitation letter and project consent form to the first batch of 100 patients, and then one month later to the next 100 and so on until target recruitment was exceeded. We placed an article in the practice quarterly newsletter *The Westgate View*, and a notice was displayed in the waiting area inviting recruitment.

Patients who expressed an interest were given a project information letter and a consent form.

User guide for patients

On receipt of a signed consent form, participants were sent, by email, the *User Guide for Patients*. The instructions also appeared as a signature on all reply emails, and were as shown in Box 1.

Box 1 Instructions for use of practice email

DO NOT USE EMAIL IN AN EMERGENCY

prescriptions@westgate1.tayside.scot.nhs.uk

For repeat prescriptions please include: full name; date of birth; the name and strength of the medication you need; and method of collection.

appointments@westgate1.tayside.scot.nhs.uk

For non-urgent appointments please request a date and time. Reception staff will book the nearest available appointment and email you to offer that appointment. Please reply to confirm that this is convenient for you to attend.

doctors@westgate1.tayside.scot.nhs.uk To consult, please give your name and a brief description of your symptoms or ask a short question. Do not disclose sensitive personal information.

Tayside Medical Ethics Committee approved the project. The project lead clinician (RN) sought the views of his Medical Defence Organisation who advised that the project did not pose undue risk.

Observation

Clinical requests and repeat prescriptions were saved to patient records. All emails received were copied to a secure server for observation and analysis by the research team.

Patient opinion survey

After the project had been running for six months a mixed-format electronic questionnaire was sent, by email, to all participants. This sought their views on the service, whether they had experience of using each of its components, and invited comments and suggestions. In order to assess the representativeness of respondents, telephone interviews were conducted

with ten randomly selected patients who had declined to enrol in the project.

Analytic strategy for the electronic interactions

Quantitative analysis was performed to determine the frequency and time of use of each component of the email service. Content analysis of qualitative data within email exchanges was based on Hahn's classification of assistance requests, which includes the following categories: instruction; explanation; information; and service.¹⁹ A further category of messages, Update, was added. Units of analysis were a request and reply exchange which formed a pair of emails. In addition to content analysis for determining the purpose of each exchange, qualitative analysis was used to characterise the specific nature and context of the electronic interactions.

Results

Participating patients

Eighty patients enrolled in the project via the mailed invitations, giving a response rate of 20%. Over the course of six months a further 70 volunteer patients enrolled whilst on a visit to the health centre. The total of 150 participants consisted of 69 males and 81 females with an age range 24–85 with an even distribution, and median, mode and mean all occurring in the mid 50s. Twenty (13%) participants used an email address likely to be from their place of work. We marked the home address of each participant on a map of Dundee and surrounding area. The great majority of participants were resident in the relatively affluent areas of the city. There were only a handful of participants from the two large housing schemes close to the health centre. We received 59 (39%) email replies to our electronic questionnaire about the service. Fifty-five (93%) respondents reported using the service and found it 'OK', 'easy' or 'very easy' to use with no reports of any technical difficulty.

Practice perceptions

The reception staff absorbed email work into their daily routines without any adverse time implications. Concerns about unfettered demand and inexorably rising workload did not materialise and all the partners were satisfied that the service did not adversely impinge on their day-to-day workload.

Answering clinical queries took one partner less than ten minutes per day.

To aid the reader, the results of the survey, content and qualitative analyses are presented together for each email service.

Repeat prescription service

All emails from patients requesting a repeat prescription were classified as service requests, as they required staff to perform an action on behalf of the sender. During the months August to November 2002 there were 59 repeat prescription requests processed by email. This represented a tiny fraction of the typical volume of requests handled by a large practice on a daily basis. We were unable to perform detailed frequency analysis of requests because patients were recruited to the project on a rolling basis. Thirty (51%) requests were initiated outside standard working hours. Almost all responses from the practice occurred within 24 hours (the project specified 48 hours as being the norm). Forty-eight (81%) were initiated on behalf of the patient themselves; the remainder were made on behalf of another family member, usually a spouse. Qualitative analysis revealed these interactions follow a similar style to other types of electronic helpline use and confirmed that patients invariably complied with the *User Guide*.

In the patient survey, 35 (59%) respondents reported having requested repeat prescriptions using email. All rated it 'OK', 'quite useful' or 'very useful', with no critical replies. The ability to request a repeat prescription at any time of the day or night was welcomed. A consistent theme was that participants preferred email to the telephone to order repeat prescriptions. The facility to receive a reply confirming safe receipt of the request was welcomed. This saved participants from wondering if their letter or telephone request left on an answering machine had been acted upon. In turn this saved the practice from having to deal with telephone enquiries checking safe receipt of requests. Two respondents suggested that the practice produce a template for ease of ordering and several participants mentioned that they had created their own ordering template and copied this for repeated requests.

Appointment service

Appointment requests were also classified as service requests. During the months August to November 2002 we identified 19 appointments marked as having been booked exclusively by email. Eight of these were initiated outside standard hours. Seventeen were completed within 24 hours. Most participants followed

our guidelines indicating a date, or a day, and time for the requested appointment. Most gave a range of options but nine gave only one date and time. Fifteen of the patients requested appointments with a specific doctor, only two said any doctor. There were seven requests for appointments with the nurse; one for the asthma clinic; one for the physiotherapist and one for the midwife. In contrast to doctor appointment requests, nurse appointment requests invariably included the reason for the appointment.

A brief dialogue developed when an appointment given was not convenient to the patient and they asked for it to be changed, or if an appointment could not be given on the day or time requested by the patient. Three of these resulted in no appointment being made via email. The responses stated with whom the appointment had been made and gave the date and time of the appointment, for example:

An appointment has been made for you with Dr X on Monday 26th at 9.20.

In some cases where no appointment with the specified doctor was available on the requested day, the first available alternative was offered; in other cases the day and time were offered but with a different doctor.

Twenty (34%) survey respondents indicated that they had used this service, of whom 16 (80%) rated it 'OK', 'useful' or 'quite useful'. Favourable comments included 'saves making phone calls' and 'lets me book outside standard hours'. Several participants commented that because they worked full time it was very convenient to communicate routine administrative matters outside normal hours, without having to use a telephone. The tone of replies from reception was referred to as quick and courteous. The lack of display of available appointment times was seen as a drawback. Some participants felt it was rather cumbersome to have to place an appointment request and then await an offer from the receptionist. The system was unfavourably compared to ease of booking theatre or airline tickets online. Our guarantee of a response within two days was perceived by some as being too slow. One participant felt the appointment system had not met his expectations because his symptoms had resolved before he had received a response giving his appointment time. Future developments of this service could include the provision of secure internet access to available appointment times.

Clinical service

Between April and December 2002 there were 36 email consultation requests and subsequent replies. Eight were initiated outside standard hours. Twenty-four were on behalf of the enquirer themselves.

Thirty-three replies were within 24 hours, and the remaining three within 48 hours.

Messages sent to the doctors' email consultation address fell into all five categories described earlier (instruction, explanation, information, service, update). The majority were instruction requests. These were framed as brief descriptions of: physical symptoms; medication; update on an ongoing condition; or a previous action taken; for example:

Since I saw you at my last appointment, I have been seen by Dr A at the eye clinic. He prescribed eye drops and anti-inflammatory pills (Voltarol 25 mg), one three times a day for two months. I see from the insert that if one is taking them at the same time as antibiotics, then consult the doctor. I am taking Ofloxacin, 200 mg, once per day, as prescribed by you. Is this alright?

The next most frequent requests were service requests. These included requesting test results, certificates for absence from work, insurance forms, and in one case a certificate for exemption from jury duties; for example:

My appointment regarding my dyspepsia was three weeks ago. I had a blood test for *H. pylori* the following week but so far I've had no feedback from the test. I'd appreciate an update from you if possible.

Information requests requiring explanatory information were also common, for example:

I had my eyes tested recently because I was bothered by a glare in the left one. I was told I would require laser treatment. Can you give me information on this condition such as risks involved and 'do's and don'ts' after treatment?

Explanation requests were less common and featured physical symptoms believed to be unusual and thus worthy of clinical comment, for example:

I'm sorry to bother you but I've had a pretty uncomfortable weekend and, Sunday night in particular, very little sleep. These palpitations in my chest are quite frequent just now and, I suppose, I just want reassurance that it's OK. I don't want to take up time in the surgery unnecessarily.

Explanation requests tended to be vaguer than other types of request, without explicit questions; for example: 'why is this happening?', 'what should I do?' and 'should I be worried about this, will it get worse/better?'

Update messages typically followed on from a previous encounter, for example:

X [enquirer's husband] was admitted to Ninewells [our local hospital] Mon pm having had another mini-stroke. He lost the power of both legs and has a weakness in the left side. He is in Ward 5 and yesterday was managing to walk to the bathroom. He has an appointment to see you Friday which I will keep.

Update information was commonly included within other types of request and rarely used on its own.

Some messages included the patient's own explanation for the cause of the symptoms and what they had done to relieve the symptoms, for example:

I have been up all last night with acute sickness, diarrhoea and shaking, etc. I got up this morning and was sick again. I took Imodium. This seems to have little effect, but I now just have diarrhoea and a sick feeling in my stomach. I have a feeling this was caused by a 'bad pint' purchased from X (I only had one). I had chicken for my dinner at my mother's house but no one else contracted this sickness. What advice can you give me on eating, drinking and how to get better?

Dialogue developed with three senders over time. The first case followed the onset of illness, tests, results, referrals and planning medical care. The second was a request for action to be taken on a patient's behalf in support of an application for a state benefit, which began with a request, followed by supporting evidence, and continued with enquiries about the progress of the application. The third concerned the effect of a medication, or rather the lack of immediate effect, in producing a change in the symptoms. There were queries at intervals as to when change should be observed. Many of these emails were initiated outside normal hours.

The responses to consultation requests varied with the different categories of request, providing information, confirming action had been taken or advising on medication. Responses to instruction requests contained brief instructions on what to do, or to continue what was already being done, and where a description of symptoms had been given, a brief explanation of what the symptoms indicated; for example:

Keep taking lots of clear fluids and avoid solid food for at least 24 hours. If the pain does not settle or symptoms continue, phone the practice and we can arrange for you to be seen.

In two cases patients were advised to make an appointment to come in and see the GP, one for treatment and one to discuss their problem further. In two cases patients were advised if there was no change within a specified time that they should come in for an appointment.

Responses to service requests contained details of the action taken on the patient's behalf, for example:

I have completed a letter to excuse you. Let the court know your GP has exempted you and you can collect the letter from reception.

Information requests were responded to with a brief explanation and advice if further queries arose. For example (in response to a question about warfarin interactions with food):

Vitamin K-rich foods include turnip, greens, broccoli, cabbage, lettuce and liver.
www.bmj.com this week has a good article suggesting an INR of 2.5 is safest.

Explanation requests contained a brief explanation of the symptoms, and in one case recommended changing the dose of the medication; for example:

The symptoms described can arise after carrying heavy loads, or if one falls asleep in an awkward position causing pressure or stretching of the nerves in the arm. Symptoms usually clear within one week. If not, see your GP to check the arm nerves are working properly.

Update messages were acknowledged:

Thanks for letting me know.

Most messages included a greeting, often indicating that the request was directed to a particular GP, and used a formal form of address:

Dear Dr X.

With the exception of one request, which may have been sent to try out the service, all the messages were an appropriate use of the service. The requests and updates did not require an appointment to exchange information.

Twenty (34%) survey participants reported having used the clinical service. It was rated 'OK', 'quite useful' or 'very useful' by 17 (85%) of these. Ease of access to medical advice for simple matters and questions was welcomed. Many patients mentioned that they did not wish to take up a doctor's time for a simple enquiry or question. They welcomed the facility to ask for simple advice without arranging a mutually convenient time to speak by telephone. Avoiding having to bother a busy doctor was a commonly expressed sentiment. One patient found it useful to let her doctor know what was happening in advance of an appointment, another remarked that he found it helpful for obtaining test results of routine monthly blood tests to monitor therapy. A simple email dialogue consisting of 'Are my blood tests OK?' followed by a 'Yes' allowed this patient to continue with medication without recourse to making appointments or arranging telephone calls during surgery hours. Criticisms of the service included concerns about which doctor(s) would read the incoming emails. One participant was disappointed that the project lead GP replied to her rather than her own GP (although the GP in question was on leave at the time).

The service was highly praised by respondents, many of whom asked if it could be continued. 'Thanks for introducing it – keep it going' was a common sentiment. Flattering opinions expressed included:

The best thing Westgate has done – it's incredibly convenient.

My friends and colleagues registered with other practices are envious of me and the service I receive from Westgate.

Non-participants

On interview, nine of the ten patients who had declined to take part in the email project stated that their reason was a lack of a computer. One gentleman stated that he never fell ill and thus did not need the service.

Discussion

The use of an email facility for patient services worked well within the practice, was deemed very helpful and useful by patients, and had no measurable adverse impact on medical workload. Before suggesting the widespread implementation of email facilities for patients, however, it is worth reviewing some of the key issues encountered in this project.

There were no technical problems encountered by the practice or by patients using the service. The project was kept simple by avoiding the use of internet sites, log on or registration issues. Unfortunately this limited the utility of the appointment service. We restricted the service to adults registered with the practice who had signed a consent form and received a set of instructions or the *User Guide*. We were thus in a position to be able to match incoming email communication against known email addresses.

We made it very plain to participants that they should not include personal or sensitive details in emails and we were careful to restrict our replies to general comments free from gratuitous personal details. Emails from patients were stored within the clinical record and enjoyed the same high level of protection as all other clinical data. In theory, an email can be read by those with access to internet file servers. Healthcare professionals and patients using email need to exercise the same level of restraint as they would with a telephone conversation, which in theory can be listened to by telecommunications personnel. The tone and content of email communication was less formal than a letter, but more structured than a telephone call.

General practitioners and their staff wishing to use email communication with patients only need to have basic computer literacy and be familiar with some simple rules of medical email such as: keep it short, keep it factual, keep out gratuitous personal details and save it. Practices may need to modify their computer records to accommodate storage for emails; this is important for medico-legal reasons, as outlined by Car and Sheikh in a recent review.^{20,21}

A concern about any new technology is that of privileged access. We were pleased to note the wide spread of ages from 24 up to 85 amongst our

participants. Patients' need for medical services, in particular repeat prescriptions, increases with age and so it is important not to exclude those most likely to benefit from the service. We were concerned about how few of our socially disadvantaged housing scheme residents took up our offer of the email service. Access to the information superhighway needs to become a medical and not just a social priority.

The issue of patient training is interesting. People already familiar with email will have no difficulty in appreciating the convenience of communicating prescription and appointment requests by email. The ability to initiate such tasks outside surgery opening hours was particularly well received. A recurrent theme of the project was patients' desire to avoid bothering the doctor with routine tasks or enquiries. Many patients expressed satisfaction at not having to use our telephone line (frequently engaged), use our car park (often full) or take up an appointment (time is valuable to both patients and doctors). It would seem that doctors and their patients can save each other time by making communication more efficient and effective using email. General practices struggling to meet externally imposed targets for patient access times may wish to consider how email facilities for patients may be used to support quick access, or crucially, the perception of quick access. The patient-practice interactions in this project were completed within 48 hours with a high level of patient satisfaction.

This study is limited because it is derived from a single practice with good computing facilities, and motivated and trained staff. It is important to stress that the patient population served included a complete socio-economic spectrum, including urban Dundee and rural Perthshire. The main barrier to practices setting up an email facility for patients is likely to be attitudinal, not technical or logistic. Recent work from the USA which suggests physicians' fears about being overwhelmed with incoming messages were not realised.²²

Conclusions

Our results reveal that there may be an unmet need amongst patients for clinical email facilities. To take full advantage of this will require a rethinking of restrictive data security legislation in addition to appropriate patient and professional training in the use and misuse of clinical email.

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REFERENCES

- 1 Eysenbach G and Diepgen TL. Patients looking for advice on the internet and seeking teleadvice. *Archives of Dermatology* 1999;135:151–6.
- 2 Bergeron BP. Get in with the e-crowd: email can serve your practice if kept in check. *Postgraduate Medicine* 2000;107:31–4.
- 3 Gurwitz D. Doctor, you've got email. *Journal of the American Medical Association* 1999;282:729–30.
- 4 Lewis AD. Patients, physicians, and email. *Archives of Dermatology* 2000;136:121–2.
- 5 Borowitz SM and Wyatt JC. The origin, content, and workload of email consultations. *Journal of the American Medical Association* 1998;280:1321–4.
- 6 Spielberg AR. On call and online: socio-historical, legal, and ethical implications of email for the patient-physician relationship. *Journal of the American Medical Association* 1998;280:1353–9.
- 7 Bloemer L. Doctor, you've got email. *Journal of the American Medical Association* 1999;282:729.
- 8 Askin DE. Making the most of email. *Neonatal Network* 2001;20:57–60.
- 9 Terry K. Email patients? Don't be nervous. Do be careful. *MedEconomics* 2001;78:83–91.
- 10 Murphy G. Patient-centered email: developing the right policies. *Journal of the American Health Information Management Association* 2000;71:47–54.
- 11 Ochs JR. Should you use email in clinical practice? *Managed Care* 2001;10:58–61.
- 12 Scottish Office. *Framework for Information Management and Technology in the National Health Service in Scotland: taking action 1998–2002*. www.show.scot.nhs.uk/imt/
- 13 Morris L, Dumville J, Campbell LM and Sullivan F. A survey of computer use in Scottish primary care: general practitioners are no longer technophobic but other primary care staff need better computer access. *Informatics in Primary Care* 2003;11:5–11.
- 14 Kane B and Sands DZ. Guidelines for the clinical use of electronic mail with patients. *Journal of the American Medical Informatics Association* 1998;5:104–11.
- 15 Neville RG, Warner FC, McCowan C and Hoskins G. Email consultations: two years' experiences from asthma information websites. *British Journal of General Practice* 2000;50:256–7.
- 16 Bergeron B. Email: a realistic conduit for patient-doctor communications? *Journal of Medical Practice Management* 2000;15:208–10.
- 17 Geddes JA. Consultation and counselling via email. *Canadian Medical Association Journal* 1997;156:484–5.
- 18 Moyer CA, Stern DT, Dobias KS, Cox DT and Katz SJ. Bridging the electronic divide: patient and provider perspectives on email communication in primary care. *American Journal of Managed Care* 2002;8:427–33.

- 19 Hahn K. An investigation of an email-based help service. *CLIS Technical Report No. 93*. 1997. www.raven.umd.edu/research/reports/tr97/03/9703.html
- 20 Car J and Sheikh A. Email consultation in health care: 1 – scope and effectiveness. *British Medical Journal* 2004; 329:435–8.
- 21 Car J and Sheikh A. Email consultations in health care: 2 – acceptability and safe application. *British Medical Journal* 2004;329:439–42.
- 22 Kittler AF, Carlson GL, Harris C *et al*. Primary care physician attitudes towards using a secure web-based portal designed to facilitate electronic communication with patients. *Informatics in Primary Care* 2004; 12:129–38.

CONFLICTS OF INTEREST

None.

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